

ADDITIONAL NOTES ON THE TAXONOMY OF THE GENUS ZENORIA
(COLEOPTERA: COCCINELLIDAE)

ROBERT D. GORDON, *Systematic Entomology Laboratory, Agricultural Research Service, U.S. Department of Agriculture*¹

ABSTRACT—In this paper four new species are described, *Zenoria formosa*, *Z. purpurea*, *Z. peruviana*, and *Z. dozieri*. The types of 3 species of *Zenoria* not previously examined are discussed, *Ladoria rudepunctata* Crotch is placed in synonymy with *Zenoria revestita* Mulsant, and data from the specimens of *Zenoria* in the Paris Museum are listed.

Since my revision of *Zenoria* (Gordon, 1971) I have been able to examine additional type material in the Sicard Collection (Paris) and the Dejean Collection (Lyon). Three of the 4 types not previously examined have been located and 57 specimens of *Zenoria* in the Sicard Collection, are included herein. Nine specimens of *Zenoria* from Peru, collected by B. K. Dozier, were examined and 3 new species are herein described from this material.

I am indebted to Mme. Bons of the Museum National d'Histoire Naturelle, Paris, for her assistance during a recent visit there, to M. David of the Museum d'Histoire Naturelle, Lyon, for allowing me to examine material in the Dejean Collection of Coccinellidae, and to H. H. Dozier for the Peruvian specimens. The habitus view of *Zenoria ratzeburgi* Mulsant presented here was prepared by Mr. Arthur Cushman.

Zenoria subcostalis Mulsant

In addition to the specimens of *subcostalis* previously recorded (Gordon, 1971), 2 undetermined specimens labeled "Guyane, Saint Laurent du Maroni" and "Bogota" were found in the Sicard Collection. This species was previously recorded only from Colombia.

Zenoria ratzeburgi Mulsant

(Fig. 1)

Mulsant's type material of *ratzeburgi* was not located previously; but a single female specimen, found in the Paris Museum general collection is almost certainly an unmarked type. This specimen, bearing the following labels, is here designated as the lectotype of *ratzeburgi*: "Museum Paris, Bresil, Minas-Geraes a Goyaz, de Castelnau 19-47"; "242"; "*Zenoria ratzeburgi* Muls., auct. det."

It was previously thought that *ratzeburgi* might be synonymous with

¹ Mail address: c/o U. S. National Museum, Washington, D.C. 20560.

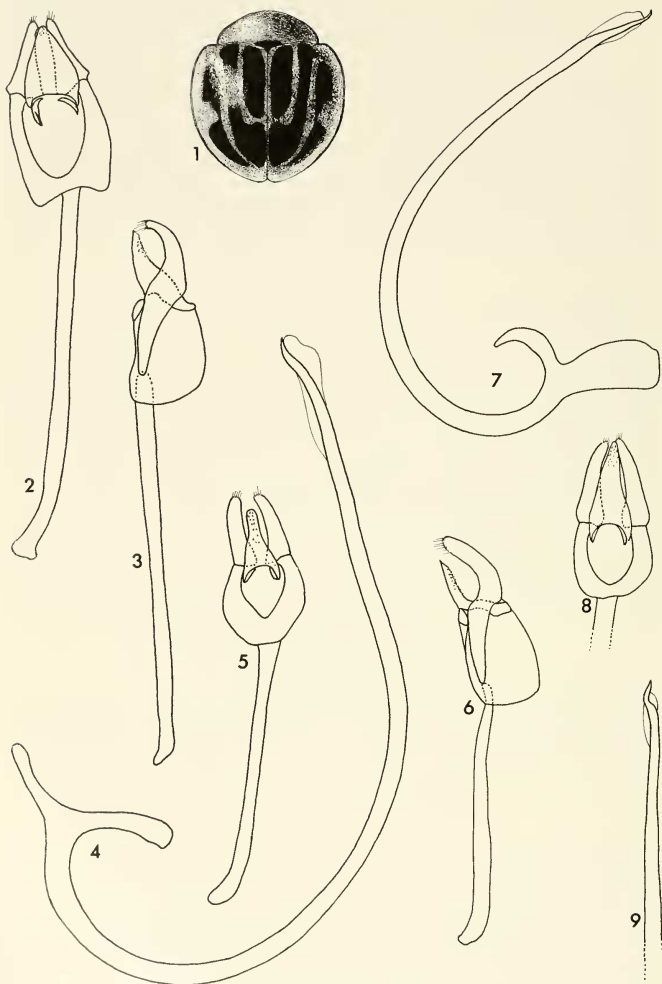


Fig. 1, *Zenoria ratzeburgi* Mulsant (habitus). Figs. 2-9, male genitalia. *Z. rodolioides* Crotch: 2, phallobase, ventral; 3, phallobase, lateral; 4, siphon. *Z. formosa*, n. sp.: 5, phallobase, ventral; 6, phallobase, lateral; 7, siphon. *Z. linteolata* Mulsant: 8, phallobase, ventral; 9, siphon.

subcostalis but examination of the type of *ratzeburgi* indicates that it is a distinct species. The vittate color pattern (fig. 1) is not at all like that of any presently known species of *Zenoria*.

***Zenoria pilosula* Mulsant**

The single female specimen with the label "Carthagena, Lebas," standing in the Dejean Collection, is here designated as the lectotype of *pilosula*. Mulsant (1850) listed the Dejean Collection as the only collection in which he had found this species. The specimen previously described as *pilosula* (Gordon, 1971) from the Crotch Collection is apparently the same species as the lectotype and agrees with it in all respects. One additional female specimen was found in the Sicard Collection, under the name "*pilosula*," bearing the label "Cayenne."

***Zenoria pallida* Gordon**

A single male specimen of *pallida* is present in the Paris Museum material. It is labeled "Santarem" and may be considered topotypical.

***Zenoria rodolioides* Crotch**

(Figs. 2, 3, 4)

A second specimen of this species, a male, was found in the Sicard Collection, named as *rodolioides* and bearing the label "Brasil." This is an extremely distinctive species with the elytra red and the pronotum yellow. The colors on the specimen in the Sicard Collection are considerably brighter than those on the type in the Crotch Collection. The male genitalia (figs. 2, 3, 4) are somewhat like those of *Z. variabilis* Gordon, but the basal lobe is broader in ventral view and much thicker in lateral view.

***Zenoria delicatula* Weise**

A single female specimen in the Sicard Collection is apparently this species and matches Weise's description exactly. Weise did not state where his specimens were collected but he received them from the Museum Paulista in São Paulo. The specimen in the Sicard Collection bears the label "S. Paulo." Males are needed here to establish the relationship of *delicatula* to the other species of *Zenoria*, but I believe it may safely be assumed that *delicatula* is a valid species.

***Zenoria crotchii* Gordon**

A single female specimen in the Sicard Collection, labeled "Itaituba, Amazonas" is this species. Another specimen, a female labeled "Guyane, Maroni," may belong here but has the discal spot nearly black rather than green as in typical *crotchii*. Males from the latter locality are needed for positive identification.

Zenoria annularis Gordon

Two specimens in the Sicard Collection are definitely this species; and a female from French Guiana, St. Laurent du Maroni may also belong here. The specimen from French Guiana has the dark green elytral spot reduced, occupying the central fourth of the elytra, but agrees well with *annularis* in all other respects. One of the 2 specimens of *annularis* bears no data, and the other is labeled "Itaituba, Amazonas."

Zenoria discoidalis (Kirsch)

Three specimens of *discoidalis* are in the Sicard Collection, one labeled simply "Peru," the others labeled "Pachitea, Perou."

Zenoria formosa, n. sp.

(Figs. 5, 6, 7)

Holotype Male.—Length 3.50 mm, width 2.98 mm. Form round, slightly elongate. Color mainly black; head, propleuron and legs yellow; pronotum black with anterior and lateral margins broadly yellow; elytron dark metallic green with apical tenth yellow. Pronotum with yellowish white, semi-decumbent pubescence, average length of hairs 0.15 mm; punctures fine, separated by their diameter or less; width to length ratio of pronotum 2.00 to 0.81 mm. Elytron with pubescence nearly completely absent; punctures coarse, deep, separated by their diameter or less, becoming shallow and separated by twice their diameter on disc, interspersed fine punctures separated by 1 to 4 times their diameter; margin of elytron moderately explanate; epipleuron with inner carina reaching outer margin. Postcoxal line extending caudad to hind margin of first abdominal sternum, outer end curved, extending cephalad. Genitalia with basal lobe shorter than paramere, broad at base, narrowed medially, parallel-sided to apex, apex bluntly rounded; parameres slightly narrowed apically, curved toward each other (figs. 5, 6); siphon with tip pointed, curved upward (fig. 7).

Female.—Similar to male except pronotum with anterior margin narrowly yellow, lateral margin yellow only in apical half.

Variation.—The pronotal color in the male varies from that described above to a form in which the pronotum is entirely yellow except a small black area on the basal projection. The apex of the elytron may have the apical eighth yellow. The pubescence on the elytron, badly rubbed on the holotype, is distinctly present on the paratypes.

Holotype.—Colombia: Cali, IX-X-1.94(1894), W. Rosenberg (Paris Museum).

Paratypes.—Total 5. 3, Colombia, R. Dagua, W. Rosenberg; 2, Colombia, Chimbo, 1000', VIII-97. (Paris Museum and U. S. National Museum).

Discussion.—In both external appearance and male genitalia *formosa* resembles *schwarzi* Gordon. It also resembles *linteolata* Mulsant in external appearance but the male genitalia are quite different. *Z. formosa* will key to couplet 28 in the key to species of *Zenoria* (Gordon,

1971). The male genitalia must be used to distinguish *formosa* from *linteolata* (now *nigricollis*, n. sp.) and *flavicollis* Gordon, but the distribution pattern is of some importance here as neither *flavicollis* or *nigricollis* are known to occur in Colombia. The lack of a pale lateral border on the elytron will separate *formosa* from *schwarzi*. Also, *schwarzi* is known only from Panama and *formosa* is known only from southern Colombia.

Zenoria variabilis Gordon

Prior to my examination of the Paris Museum material, *variabilis* was known only from Peru. There are 4 specimens of *variabilis* in the Paris Museum material, all from Bolivia, bearing the following data: "Salinas, Beni R., VII-95, M. Stuart"; "Chaco, Bolivié"; "Guanay, Mapiri R., 1300 ft., VIII-95, Stuart." Two of these specimens are immaculate dorsally, the other 2 have an elytral pattern not previously described for this species. There are 3 brown areas on the elytron; a large, irregular area near the lateral border just anterior to the middle, a small, round area on the disc not touching the suture, and an irregular, transverse area on the apical third which touches the suture.

Zenoria emarginata Gordon

A single male of *emarginata* labeled "Cayenne" is present in the Paris Museum material. The color pattern is like that of a form of *subcostalis* Mulsant (fig. 13, Gordon, 1971) except that the black border on the elytron extends to the suture at base, but the male genitalia are those of *emarginata*. *Z. emarginata* was previously known only from Trinidad.

Zenoria revestita Mulsant

Zenoria revestita Mulsant, 1850, p. 900.

Ladoria rudepunctata Crotch, 1874, p. 280.—Korschefsky, 1931, p. 231.—Blackwelder, 1945, p. 451. NEW SYNONYM.

Examination of the type specimen of *Ladoria rudepunctata* in the Crotch Collection, Cambridge University, indicates that it is a synonym of *Zenoria revestita*.

There are 6 specimens of *revestita* in the Paris Museum collection, 1 labeled "Bresil," the others labeled "Tijuca (Rio), Bresil, E. Gounelle, 12-1884."

Zenoria similis Gordon

There are 3 specimens of *similis* in the Paris Museum collection labeled "Oazaca, Mexico, Hoege"; "Teapa, Tabasco, Feb., H. H. S."; "Bugaba, Panama, Champion." None of these localities was previously recorded.

Zenoria patula Gordon

The female of this species was not previously known but 1 of the 3 specimens in the Paris Museum material is a female. The female is similar to the male except that the head is entirely black and the pronotum is also black except for a narrow, yellow, anterolateral border. All 3 specimens are labeled "Tijuca (Rio), Bresil, E. Gounelle, 12-1884."

Zenoria linteolata Mulsant

(Figs. 8, 9)

It was previously assumed (Gordon, 1971) that 2 female specimens in the Crotch collection from Brazil and 1 male from British Guiana in the USNM collection were this species. At that time the location of the type or types of *linteolata* was unknown. Since then a specimen in the Sicard Collection, was found which is almost certainly a type. Mulsant (1850) stated that the material he saw was in the Mocquerys Collection. In the Sicard Collection are a number of specimens labeled "Mocquerys," usually corresponding to those species Mulsant had from Mocquerys. Apparently Sicard acquired some or all of the Mocquerys Coccinellidae. A single male bearing the following labels and a black disc and a green disc, standing under the name "*Z. linteolata*" in the Sicard Collection, is here designated as lectotype: "a Mocquerys"; "*Zenoria linteolata*."

Lectotype Male.—Length 3.33 mm, width 2.85 mm. Form round, slightly elongate. Color mainly black; head, propleuron, entire anterior leg, apex of femur and entire tibia and tarsus of middle and hind legs, and abdomen yellow; pronotum black with anterior and lateral margins bordered with yellow, yellow not extending to hind margin of pronotum; elytron dark metallic green. All dorsal pubescence rubbed off. Pronotal punctures fine, separated by their diameter or less; width to length ratio of pronotum 1.87 to 0.85 mm. Coarse punctures on elytron deep, separated by less than their diameter, not present on disc, interspersed fine punctures separated by 1 to 4 times their diameter; lateral margin of elytron feebly explanate, sinuate; epipleuron with inner carina extending half the distance to outer margin. Postcoxal line extending caudad to hind margin of first abdominal sternum, outer end abruptly curved cephalad. Male genitalia with basal lobe subequal in length to paramere, tapering gradually, evenly, from base to bluntly pointed apex (fig. 8); siphon with apex slightly curved upward, pointed, all except apical third lost (fig. 9).

Female.—Not known.

Type locality.—Brazil (Mocquerys).

Type depository.—Paris Museum (lectotype here designated).

Discussion.—*Z. linteolata* runs to couplet 28 in the key to *Zenoria* (Gordon, 1971). Male genitalia are needed to separate this group of species.

Zenoria nigricollis, n. sp.

This is the species previously described as *Zenoria linteolata* Mul-sant (see Gordon, 1971). The male specimen in the USNM from British Guiana, Bartica District, Kartabo, is here designated as the holotype of *nigricollis*. The other 2 specimens previously discussed, both females in the Crotch Collection, may or may not be conspecific and are not designated as paratypes.

Zenoria flavicollis Gordon

A single male from Brazil, labeled "Ega," is in the Paris Museum. The pronotum is not as described for the holotype, being nearly all black with anterior and lateral margins yellow, the yellow not extending to base of pronotum. The larger size of *flavicollis* will probably separate that species from *linteolata*, but male genitalia are needed to separate *flavicollis* from *nigricollis*. The Paris Museum specimen of *flavicollis* is topotypical.

Zenoria major Crotch

A single female specimen from Brazil, Santarem, is almost certainly this species. It bears the label "Santarem (Bates)," agrees in all respects with the type specimen, and may be considered a topotype.

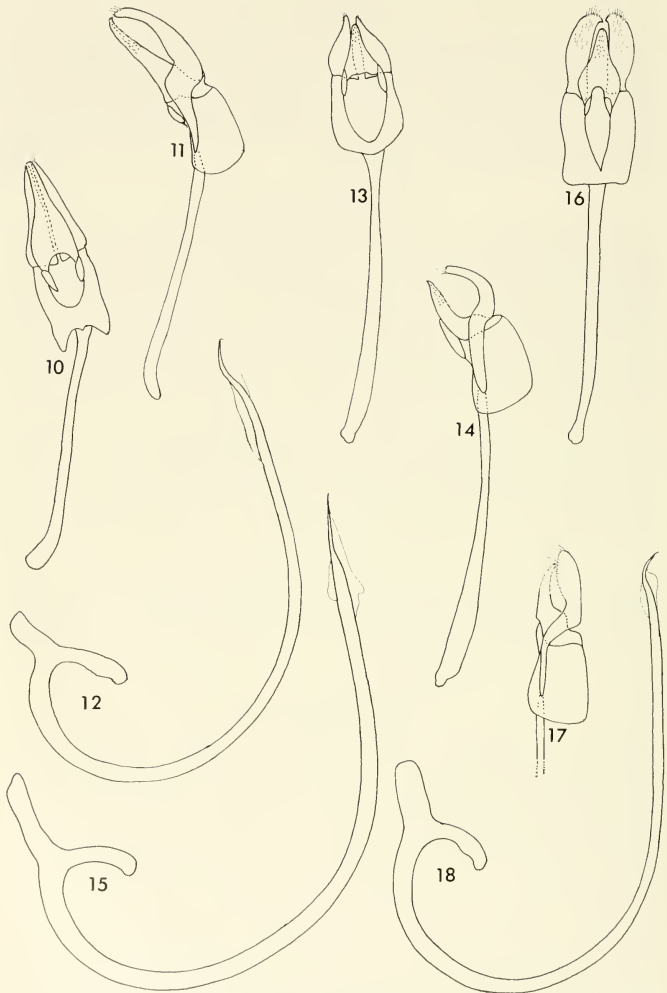
Zenoria carinata Gordon

A female specimen labeled "Guyane Francaise, Laurent du Maroni, collection le Moult" is in the Paris Museum collection. It is the third specimen of *carinata* to be recorded, the others being from Surinam. The male is still unknown.

Zenoria purpurea, n. sp.

(Figs. 10, 11, 12)

Holotype Male.—Length 3.36 mm, width 2.75 mm. Form round, slightly elongate. Color mainly yellow; pronotum black with broad lateral and anterior margin yellow; elytron dark metallic purple; meso- and metasternum black; abdomen reddish yellow. Pronotum sparsely covered with grayish white, semidecumbent pubescence, average length of hairs 0.12 mm; punctures fine, separated by their diameter or less; width to length ratio of pronotum 2.00 to 0.85 mm. Elytron with sparse, grayish white, semi-erect pubescence, average length of hairs 0.15 mm; coarse punctures shallow, separated by their diameter or less, becoming smaller and sparse on disc, interspersed fine punctures separated by 1 to 4 times their diameter; margin of elytron broadly explanate; epipleuron with inner carina extending half the distance to lateral margin. Postcoxal line reaching hind margin of first abdominal sternum, abruptly bent forward, apex nearly reaching coxal cavity. Abdomen with 6th sternum deeply notched, notch occupying apical half of sternum; 5th sternum depressed medially. Male genitalia with basal lobe equal in length to paramere, apex curved upward in lateral view, bluntly pointed; para-



Figs. 10-18, male genitalia. *Zenoria purpurea*, n. sp.: 10, phallobase, ventral; 11, phallobase, lateral; 12, siphus. *Z. peruciana*, n. sp.: 13, phallobase, ventral; 14, phallobase, lateral; 15, siphus. *Z. dozieri*, n. sp.: 16, phallobase, ventral; 17, phallobase, lateral; 18, siphus.

mere narrowed toward apex (figs. 10, 11); siphon with apex curved slightly upward (fig. 12).

Female.—Similar to male except 6th sternum entire, 5th sternum emarginate. Head with black spot on vertex, pronotum entirely black except narrow anterior border between eye and anterolateral angle yellow.

Variation.—Length 3.36 to 3.60 mm, width 2.75 to 3.05 mm.

Holotype.—Peru: Iquitos, Mar. 24, 1969, B. K. Dozier (USNM 71721).

Paratypes.—Total 2. Peru: same data as holotype. (H. L. Dozier collection).

Discussion.—The metallic purple elytron will immediately separate *purpurea* from any presently described species of *Zenoria*. The emarginate 5th sternum of the female is also unusual in the genus. The male genitalia are most like those of *Z. tricolor* Nunenmacher but the basal lobe is sinuate and distinctly bent upward at the apex in lateral view in *purpurea*, nearly straight and just perceptibly curved upward at apex in *tricolor*. In the key to species of *Zenoria* (Gordon, 1971) *purpurea* goes to couplet 6 where the purple elytron will separate it.

Zenoria peruviana, n. sp.

(Figs. 13, 14, 15)

Holotype Male.—Length 3.71 mm, width 3.15 mm. Form nearly round, slightly elongate. Color mainly yellow; pronotum with median basal projection black; elytron dark metallic green with a small yellow area along lateral margin at humeral angle; meso- and metasternum black, abdomen reddish brown. Pronotum with grayish white, semidecumbent pubescence, average length of hairs 0.12 mm; punctures fine, separated by less than to 3 times their diameter; width to length ratio of pronotum 2.38 to 1.10 mm. Elytron with dense grayish white, semi-erect pubescence, average length of hairs 0.16 mm, discal area with an indistinct spot caused by dark brown pubescence; coarse punctures deep, separated by their diameter or less, not extending onto disc, interspersed fine punctures separated by less than to 4 times their diameter; margin of elytron distinctly explanate; epipleuron with inner carina extending half the distance to lateral margin. Postcoxal line nearly reaching hind margin of first abdominal sternum, abruptly bent forward, apex nearly reaching coxal cavity. Abdomen with 6th sternum notched, 5th sternum depressed medially. Male genitalia with basal lobe subequal in length to paramere, in lateral view tapered to pointed apex, in ventral view strongly narrowed from base to midpoint, gradually narrowed from midpoint to bluntly rounded apex; paramere strongly curved downward, outer margin widely flared near base (figs. 13, 14); siphon with apex nearly straight, attenuate (fig. 15).

Female.—Not known.

Holotype.—Peru: Iquitos, 100 mi. N.E. on Napo River, Mar. 18, 1969, B. K. Dozier (USNM 71722).

Paratype.—Total 1. Peru: same data as holotype. (H. L. Dozier collection).

Discussion.—*Z. peruviana* will go to couplet 28 in the key to species

of *Zenoria*. The male genitalia must be used to separate *peruviana* from the other species with this type of color pattern. The genitalia are most like those of *paprzycki*, but the basal lobe is thickened, not bent upward in *peruviana* and is more abruptly narrowed medially in ventral view.

***Zenoria dozieri*, n. sp.**

(Figs. 16, 17, 18)

Holotype Male.—Length 3.90 mm, width 3.43 mm. Form round, slightly elongate. Color mostly black; head, narrow anterior and anterolateral angle of pronotum, propleuron, prosternum and legs yellow; elytron black with shining discal spot of dark brown pubescence, lateral fourth of elytron with metallic bronze and green lustre. Pronotum with grayish white, semidecumbent pubescence, average length of hairs 0.10 mm; punctures fine, separated by 1 to 3 times their diameter; width to length ratio of pronotum 2.30 to 0.81 mm. Elytron with grayish white, semi-erect pubescence, average length of hairs 0.15 mm; coarse punctures deep, separated by their diameter or less, not extending onto disc, interspersed fine punctures separated by to 4 times their diameter, lateral margin of elytron distinctly explanate, sinuate; epipleuron with inner carina extending nearly to outer margin. Postcoxal line reaching hind margin of first abdominal sternum, abruptly curved forward, nearly reaching coxal cavity. Male genitalia with basal lobe shorter than paramere, in lateral view curved upward apically, in ventral view abruptly narrowed to bluntly rounded apex in apical half; paramere inflated, in lateral view constricted near base, in ventral view inner apical angle with a small tooth (figs. 16, 17); siphon straight before apex, curved downward and recurved at apex (fig. 18).

Female.—Not known.

Holotype.—Peru: Iquitos, Mar. 24, 1969, B. K. Dozier (USNM 71723).

Discussion.—The male genitalia of *dozieri* resemble somewhat those of *discoidalis* Kirsch in having the paramere inflated with an apical tooth. The basal lobe is quite different in the 2 species. *Z. dozieri* goes to couplet 25 in the key to species of *Zenoria*, and here the male genitalia are quite different from those of *patula* or *serva*. If the presence of the metallic bronze and green lateral border on the elytron of *dozieri* proves to be constant it will immediately distinguish that species.

REFERENCES

- CORDON, R. D. 1971. A revision of the genus *Zenoria* Mulsant (Coleoptera: Coccinellidae). *Smiths. Contr. Zool.*, no. 86, 22 pp.
MULSANT, E. 1850. *Species des coléoptères trimères sécuripalpes*. *Ann. Sci. Phys. Nat.*, Lyon 2(2):1-1104.